
Lake Meyer Project

Watershed Improvement Review Board Final Report

Project # WIRB 1242-019: September 1, 2013 – September 30, 2016.

Report Prepared By: Corey K. Meyer on behalf of the Winneshiek SWCD



Project Background

The Winneshiek Soil & Water Conservation District (WSWCD) has successfully administered numerous watershed projects over the past 20 years. One of our long term efforts, the Lake Meyer Project (LMP) is a water quality project that was developed in unison with the construction of the lake in 1968. Since the lakes inception 48 years ago the WSWCD has had a focused initiative to allocate priority funding for Best Management Practices (BMP) when available for the long-term sustainability of this crucial county multi-use recreational area and environmental education epicenter. The lake and associated park area is managed by the Winneshiek County Conservation Board (CCB) and is a wildly popular fishing locale that features trophy species such as Largemouth Bass, Northern Pike and family friendly bobber dunking Bluegills and Black Crappies. The SWCD committed to peruse WIRB grants to increase the available cost share dollars to effectively leverage partners' funds through implementation of crucial Best Management Practices (BMPs) in the targeted areas in the watershed.

This 1,590 acre watershed is influenced by two underlying factors; 73% of this watershed is in working agricultural production and of the remainder acreage, 9% is heavily influenced by urban stormwater runoff. Despite efforts by landowners and producer within the working lands of the watershed to implement BMP's Lake Meyer first appeared on the 303 (d) lists for impaired water waters in 1998. The known impairment to the lake is listed as sedimentation (loss of in-lake habitat) and nutrient loading (especially phosphorus, leading to protracted algal issues). Water sampling conducted by the Iowa Hygienic Lab and Iowa State University indicate the lake is near a hypereutrophic state (based on measurements in to the Carlson Trophic Index) which have at times adversely affected the fish population of Lake Meyer. The Iowa Department of Natural Resources implemented a Total Maximum Daily Load plan for the lake in 2005. Evidence of degradation and sedimentation to this manmade lake is the original footprint of a 37 acre pool has been constricted to the current pool size of 33 acres.

Sediment and nutrient loading has drastically impacted the appearance and detrimentally changed the depth and quality habitat for game fish populations. This aging of the lake was further backed by the USGS when they conducted Bathymetric Mapping (a very precise underwater contour map) which revealed the lake had indeed taken on the burden of heavy layers of silt to the point the average depth of the lake was now 13 feet. This was reaffirmed by the fishing public and the Iowa DNR fisheries staff through regular population surveys though; the fish just weren't reaching potential growth rates. The long-term productivity of the recreational area seemed to be in decline and a reinvigorated spotlight on conservation manipulation was set upon by all vested partners. Iowa DNR Fisheries Biologist Bill Kalishek surmised it best by stating "overall case studies from lakes have shown that waterbodies that are in a hypereutrophic state can reverse a downhill slide by locking up radical sediments and nutrients in the upland landscape instead of in the water column; allowing plants and organisms to consume available nutrients in the lake bed thus reducing the in-lake nutrients available for algal blooms and therefore inherent problems to the ecological cycles of the lake, thus increasing the ability of the waterbody to be a high quality fisheries again."

The award #1242-019 by the WIRB was dovetailed at the time to the ongoing watershed project and stated objectives and goals of the project. Keystone goals were accepted as:

Goal 1: Reduce delivery of sediment and nutrients to Lake Meyer by target placement of BMP's on Winneshiek CCB lands

- **Objective I:** Expand upon achievements thus far in targeted areas of the LMP and in the progression of watershed project is to construct a Rock Chute Retention Wetland and associated Grade Stabilization BMPs to reduce sediment/nutrients delivered to the lake, pinpoint construction on lands of the Winneshiek CCB thus reducing impacts by sediment and nutrient loading

Goal 2: Increase the culture of conservation among all landowners, producers, urban residents, and visitors to the Lake Meyer Watershed.

- **Objective 1:** Highlight producer's contributions and investment into project participation and promotion of conservation participation. This will be done to ensure the longevity of the Lake Meyer Area and us promotional materials to highlight the importance of water quality projects and BMP's

This project accentuates efforts to improve water quality in the Lake Meyer watershed by addressing the major sources of impairment that have been identified through a comprehensive assessment of the watershed. A series of catch basins have been built on strategic points that funnel stormwater from urban runoff and basins that impede movement of sediment and nutrients. These structures allow sediment and attached nutrients a chance to settle out of flowing water, acting as effective traps that are very important during stormwater runoff events. The next step in progression in limiting the impact of sediment/nutrient loading is to construct a sediment/nutrient rock chute retention wetland that will be placed at the head of Lake Meyer, acting as a sponge in collecting excess free nutrients and trap sediment at a rate of 80% before it reaches the lake. This structure will slow all but the largest storm flows allowing the particles to be trapped within the 5 acre pool. Also, a grade stabilization upslope of the wetland structure is planned and constructed in a forested gully that is fed by stormwater runoff from adjacent crop ground that has dumped close to 111 t/yr. into the adjacent lake. These structures have been designed to NRCS specifications to ensure long-term success and quality of the project. The project provided the technical assistance necessary to implement crucial BMPs in targeted areas of the watershed. The following BMPs have been and will continually be promoted to effectively address water quality impairment sources in the LMP; terraces, sediment basins, grass waterways, grade stabilization structures, and filter strips.

Project partners have operated closely with partners such as the Winneshiek County Conservation Board (CCB) and landowners to market and promote BMPs, adhering to the objectives of the project using guidance from stewardship partners and fiscal agents with outlined data and pertinent information from documents such as the TMDL and advisory board recommendations. These collaborations have exhibited enthusiasm towards the implementation of practices that focus on goals set forth from the watershed advisory board to emphasize the removal of the LMP from the impaired waters list. This expired WIRB funding agreement was a mechanism spanning a 3year (September 2013-September 2016) period, it is a part of a larger portion water quality enhancement not only in the LMP but also the Turkey River Watershed that has targeted goal load reductions of sediment and phosphorous (TMDL listings) to accomplish the stated project goals for the entirety of water quality project.

Simultaneously, during the WIRB granting period a symbiotic WSPF funded water quality project was being conducted in the watershed to improve water quality in the Lake Meyer by addressing one of the major sources of impairments (Phosphorous) that have been identified through a comprehensive assessment of the watershed. This successes full project was accomplished by the renovation of 2 Livestock Manure Structures that have been identified with our watershed assessment as being crucial points of nutrient loading capabilities to the impairment of the lake from runoff events. These structures allow manure and nutrients to be effectively trapped which is very important during stormwater runoff events. These structures now allow the producer the opportunity to store efficiently the amount of manure produced by their livestock for a duration of up to 270 days to ensure the manure and nutrients are being land applied under optimal conditions; thus maximizing the uptake of phosphorous by plants and minimizing the threats of wayward nutrients compounding the in-lake loads of the nutrients causing protracted algal blooms.

There are very few recreational impoundments or lakes in Northeast Iowa; Lake Meyer being one of the scarce eco-terminuses for fishing, camping, canoeing, kayaking, outdoor education and outdoor tranquility. It is the only lake found in Winneshiek County. According to the IDNR, a quality fishery may perhaps draw substantial number of individuals for fishing trips. Iowa anglers spend about \$27 in equipment and trip related expenses per trip. Using a factor of 280 (Statewide Average) angler trips/acre @ 33 Acres = 9,240 angler trips annually that would equate to \$249,480 annually being contributed into the local economy. The Winneshiek CCB has estimated the annual usage of the entire Recreational Area is roughly 18,000 visitors / year.

Financial Accountability

Grant Agreement Budget Line Item	Total Funds Approved (\$)	Total Funds Approved— Amended (\$)	Total Funds Expended (\$)	Available Funds (\$)
Rock Chute Wetland	34,610.00	34,610.00	26,000.00	8,610.00
Grade Stabilization Structures	24,960.00	24,960.00	24,960.00	0.00
Information & Education	2,000.00	2,000.00	559.45	1,440.55
Administration	2,000.00	2,000.00	2,000.00	0.00
Totals	63,570.00	63,570.00	53,519.45	10,050.55
Difference				10,050.55

This WIRB award was sought after by the SWCD to ensure the matching Fish Habitat Funds were already on hand would be available to extend the opportunity to comprehensively cover costs for BMPs with limited the financial assistance available. By complementing funds from different sources (WSPF -IDALS, EQIP-USDA/NRCS, Fish Habitat-IA DNR, CRP-USDA/FSA) the likelihood of a successful project could be weighed against bacteria, sediment and nutrients with the achievement of measurable reductions. 100% cost-share was allowed for county owned cost-share to build structural practices; this enticement of funds secured confidence from all governmental partners to complete BMPs yet allow them investment of their limited local funds advocating complete buy-in towards accomplishing stewardship.

	Unit	Approved Goals	Goals Accomplishments	Percent Completion
Grade Stabilization	No.	1	1	100%
Rock Chute Wetland	No.	1	1	100%
Information Kiosk	No.	1	1	100%

Execution of the planned goals of the project, financial culpability (funds invested) and technical development of practices were not hindered by eradicate weather during the life of the project. Optimal weather conditions allowed optimal construction techniques to be applied to ensure the integrity of the stewardship practices to be built.

Funding Source	Approved Application Budget (\$)	Actual (\$) Invested	Investment Towards Partnership
WIRB	\$63,570.00	\$53,519.45	8%
Winneshiek CCB	\$85,098.00	\$55,063.40	9%
NRCS	\$4,000.00	\$4,000.00	1%
Winneshiek SWCD	\$3,000	\$3,510.84	1%
Other	\$0	\$512,406.36	81%
Totals	\$155,668.00	\$628,500.79	100%

Watershed Improvement Fund contribution: Approved application budget: 34%
Actual: 9%

Partner commitment to the project can be appreciated to the piggy-backed funds from all the watershed stewardship activities that were an aggregate of project resources invested into BMPs which is nearly 4 times the amount as set forth in the WIRB Award application. In summation, the other project partners invested over \$500,000 to surpass the original goals set forth in the WIRB Award application to improve water quality, intensify the culture of conservation and infuse the local economy from services rendered. The Other column is an aggregate of funding sources highlighting partner investment / involvement from Landowners, SRF Revolving Fund, CRP, EQIP and WSPF. BMPs that were built within watershed project area were built to USDA-NRCS Engineering Standards to ensure longevity and integrity. Maintenance agreements have been signed for every practice installed to ensure reliability and producer/partners are dedicated to upkeep of stewardship practices.

Environmental Accountability

The Advisory Board consisting of partners from USDA-NRCS, WSWCD, Central Turkey River Nutrient Reduction Demonstration Project, Iowa DNR, Winneshiek CCB, City of Calmar and a watershed landowner review the water sampling data, long-term ecological changes in the watershed, define long-term goals for the watershed, priority areas within the watershed have been defined and deliberated placement of targeted BMP's for the watershed.

Phosphorous is one of the major contributors to the impairment of the Lake Meyer; this has been displayed by long-term sampling data. A downward trend in the overall phosphorous loading has been displayed along with more stable baseline of secchi disc readings correlating to the time when the WSWCD made a reinvigorated effort to work with landowners in watershed starting 2006 to install buffers and structures that minimized the effects stormwater runoff. Total phosphorus spikes have occurred during rain events years where stormwater fluctuations have increased the measured phosphorous into the system. Considering previous targeted BMP placement throughout the watershed; the 2013 spike may be contributed to adjacent property runoff from land applied manure or livestock storage systems and also from in lake resuspension of sediments and attached phosphorus from increased lake levels. Thus the premise of this project in the rationale of guiding the adjacent landowners in the application of nutrients to be monitored through nutrient management plans along with construction of the targeted structures (grade stabilization and rock chute wetland) should increase overall point of water quality impact.



Water monitoring has been a competent tool to quantitate the effectiveness of the BMPs that have been targeted to the watershed's priority areas. Sampling by the district has focused on the following parameters: water temperature, dissolved oxygen, turbidity, chloride, pH, nitrate-N, phosphate and ammonia. Our sampling data extends over 5 years of sampling dates which also complements Iowa State University's Limnology's decade worth of in-lake water sampling. Water sampling will continue through the Winneshiek SWCD funding through the perpetuity of Lake Meyer Watershed efforts. So far sampling has confirmed that our loading issues of sediment and nutrients are in correlation to runoff events; this has been exhibited by monitoring summaries and Iowa DNR data.

The construction phase of the project began with the drawing down of the lake to implement construction. The lake's water began to be lowered at the end of May 2015; a drop of 10 feet below normal pool was held throughout the summer to ensure site construction feasibility, safety and to recycle / consolidation of nutrients into vegetation that grew on exposed mudflats.





Bids were requested from interested contractors, a contractor was accepted and construction began in September and the rock chute wetland and grade stabilization structure were completed by late October due to perfect weather conditions. With direction from the Winneshiek CCB the contractor went through extraordinary efforts to ensure the quality of micro habitats within the construction areas were protected throughout the projects life.

- Over 1,200 acres of cropland and urban runoff are filtered by the rock chute wetland. The pool of the wetland is managed to ensure sediment, nutrients and storm waters are moderated within the wetland to increase the health of water quality and prolong the longevity of the adjacent lake ensuring a vibrant aquatic ecosystem
- 2,872 Tons per Year of sediment loading and 3,734 Pounds per Year of Phosphorus will be trapped by this wetland which meets the TMDL recommendations for maximum recreation longevity of the adjacent lake
- The wetland structure is one of many targeted structures in the watershed that has been constructed to deaden storm water peak flows; thus decreasing re-agitation of sediments in lake during flooding events that have historically caused algae blooms harming the recreational and environmental health value of the lake
- A grade stabilization structure was constructed on the known highest inputting gully in the watershed. This basin will trap 111 Tons per Year of sediment & 144 Pounds per Year of Phosphorus



Also, during this time frame the exposed mudflats had revealed that in some places over 5 feet of sediment had been trapped within the lake bed from erosion from up within the watershed. The opportunity became available to remove some of this siltation and revive the overall capacity of the lake further. The removal of sediments played three important roles; first it will decrease the available phosphorous / nutrients that can be re-agitated during flooding events or excessive wave action that had caused algae blooms harming the recreational and health value of the lake. Secondly, more of the lake was freed of a silt blanket that increased the various habitats for numerous species of animals that use this area. Lastly, the sediments were used to reclaim a county owned rock quarry that is a public nuisance and water quality hazard. The contractor and county secondary roads department removed 700+ dump truck loads of sediments from the lakebed that had been washed in over 40 years.



The Iowa DNR also conducted extensive fish habitat projects within the lake at the time of drawdown to enhance the fish habitat and spawning areas.

This project boasted a substantial collaboration between partnerships: Winneshiek SWCD (administration of project), Winneshiek CCB (funding, construction & administration), USDA-NRCS (layout, design, & construction oversight), Iowa DNR (fish habitat stamp funding), WIRB (funding) and the Winneshiek Co. Supervisors (funding).

Analysis formulated in the TMDL shows the lake has a sustainable capability of receiving up to 1,570 tons of sediment/year for its 1,590 acre watershed. The average loading per acre of the watershed for Phosphorous is 1.2 lbs. per acre is calculated at a sustainable rate of 1,908 lbs./yr. for the lake. Targeted BMPs placement watershed-wide within the last 6 years have reduced 379 tons of sediment/yr. and 455 lbs. of phosphorus. Additionally by constructing the priority BMPs from the project we have eliminated 2,983 Tons per Year of sediment loading and 3,878 Pounds per Year of Phosphorus in this wetland and the grade stabilization structures. Statistically merging all BMPs constructed in the past 10 years in regards to sediment and phosphorous load reductions we have exceeded TMDL loading recommendations for maximum recreation longevity of the adjacent lake.

Goal 2 (Culture of Conservation) assigned the task of marketing and educating the need of stewardship practices within the priority watershed that resulted in participating producers to install of BMPs resulting in manure, sediment and nutrient loading declines during the WIRB Award timeframe of the LMP. These declines were measured with the utilization of the Iowa DNR pollution delivery calculator and water sampling.

Normal farming practices found in the watershed consist of terraces, waterways, conservation tillage, strip cropping, and buffer strips. Some typical rotations include two years of corn followed by oats and three years of hay, or a corn — soybean rotation. Soil loss calculations using the Revised Soil Loss Equation (RUSLE) indicated the average soil loss on cropped acres in the watershed is about 7.5 tons per acre. A GIS soil loss assessment by IDNR estimated the overall sediment delivery in the watershed is about 2.1 tons per acre per year or 3,269 tons per year for the entire watershed. With the majority of the land use within the watershed being utilized for crop production, it is imperative the use of conservation crop rotations by the 11 farming operations within the watershed. A 1/3rd of producers in the watershed are using cover crops in their operations, over 65 % utilize extended rotations in operations and 75% of the lakes tributaries have vegetative filter strips >50ft.



This aerial photo with LIDAR overlay of the LMP watershed depicts the topographical relief of the landscape and the tracks of conservation practices on the different slope aspects, which this rugged watershed exhibits. Terraces and as well as the filter strips near the sinuous streambed are very recognizable in this fashion of photography. Basins and Grade Stabilization are located in the target gullies and draws that have produced the greatest loading potential.

As mentioned before another watershed effort coincided with this WIRB funded project that featured one producer's operation due to its proximity to the priority waterbody we were able to intensively measure the impacts of the livestock manure and cropland manure application to this specific operation. This producer has 119 acres of cropland that is available for overland nutrient application within the Lake Meyer Watershed and 201 acres outside the watershed. According to the data supplied in the Certified Nutrient Management Plan: this producer's land application of nutrients such as Phosphorous within manure shows that the acres that are being cropped (26,600 lbs. removal) can support the uptake of all the Phosphorous being applied (25,833 lbs.) as a fertilizer for production in this priority area. This is supported by calculating the amounts of manure being generated by the dairy herd, the specific crop rotation of 3 years of Corn Silage, with cover crop after crop termination, the 3 year rotation of alfalfa hay and then back to corn silage production. The cropping rotation demands heavy doses of rich organic matter manure that can sustain the soil health without mining of the total soil nutrients. So ensuring that there is adequate storage for this copious amounts of manure has been met by the construction of the tank (replacing an earthen lagoon that was undersized for the operation) and stacking pad / settling basin (open lot that channelized run off through a drainage ditch); reinforces proper timing of manure application of the manure within the buffer zone of the lakes immediate drainage. Net zero loss of manure from the newly constructed concrete tank and stacking pad / settling basin structures are being operated by this producer to USDA-NRCS standards and in accordance of the CNMP. These actions will act as additional assurance by continued systematically targeting possible nutrients sources we are eliminating overall phosphorous load to the lake in accordance to TMDL and advisory board recommendations.



Fall of 2015 aerial photo showing the completed BMP's and close vicinity of Lake Meyer. The upper left yellow circle highlights the locale of the open earthen lot that was replaced by a stacking pad / settling basin. The lower right yellow circle highlights the earthen manure lagoon that was replaced by a cement storage tank that is the receptacle for all the manure from the dairy free stalls that holds over a million gallons of manure; until it can be applied to the landscape in a proper prescription as detailed by the Certified Nutrient Management Plan that was developed for this producer and his farming operation.



The impetus of nutrient stewardship for this watershed has been supported by the building of manure storage facilities on all the open lots, that are able to handle incurred manure production while limiting stormwater contamination from lots or lagoon; coincides with land application of manure to cropland with nutrient application by following the 4 R's prescription of Right - Source, Rate, Time & Place. Accounting for nutrient application is paramount going forward by producers as all the open lots in the watershed have been incorporated into following CNMP's and NRCS designed manure storage systems.



A focal point as a result of this project being completed would be the capability of using these installed BMP's as educational instruments for all ages that visit the park and nature center. With the creation of these practices, each person that comes to the lake will have the availability to have hands on experience of how a wetland functions, what species inhabit these unique ecosystems, how watersheds work and the prospect of seeing migratory wildlife and amphibian species.

The Winneshiek CCB park trail system gives vantage viewing points to the wetland and grade stabilization structure that are a paramount feature as an educational outdoor classroom with signage and a diorama of the a functioning Lake Meyer wetland. As described in RFA for this project it was necessary to have a tutorial kiosk associated near these BMPs to further market the importance of stewardship and the impacts to water quality. To the right is a close snap shot of the tutorial board that was installed near the rock chute wetland structure.



Lake Meyer Watershed Project

- Watershed project started with the inception of the lake
- 1999 Lake listed on 303(d) list, TMDL completed in 2005, sediments / nutrients
- 37 acres of 33 acres of acre feet filled in. With nutrient loading leads to hypertrophic conditions
- Over 40 years of watershed project BMP's = 75% post-share
- 1590 acres watershed, 73% watershed working lands, 9% urban
- 12 Landowners of Ag Land, operated by 8 individuals
- 2.6 of 3.5 miles of feeder streams have protected buffers / filters
- Since FY2008 \$202,426.31 invested thru BMP placement
- Additional 1097 t/y sediment reduction

Conservation Practices	Amount Installed
Continuous CRP (Filter Strips)	64.3 Acres
Manure Storage Systems	3 Units
Terraces	35,876 Feet
Grade Stabilization Structure	4 Units
Sediment & Water Control Basins	5 Units
Grassed Waterways	4,606 Feet
Stormwater Interceptors (Bio-Swales)	3 Units
Stormwater Wetlands	2 Units

From the first terraces and field days in 1966 to today landowners in the Lake Meyer Watershed have made commitment to the water quality and environmental integrity of the watershed by installing BMPs that helped protect this valued waterbody.



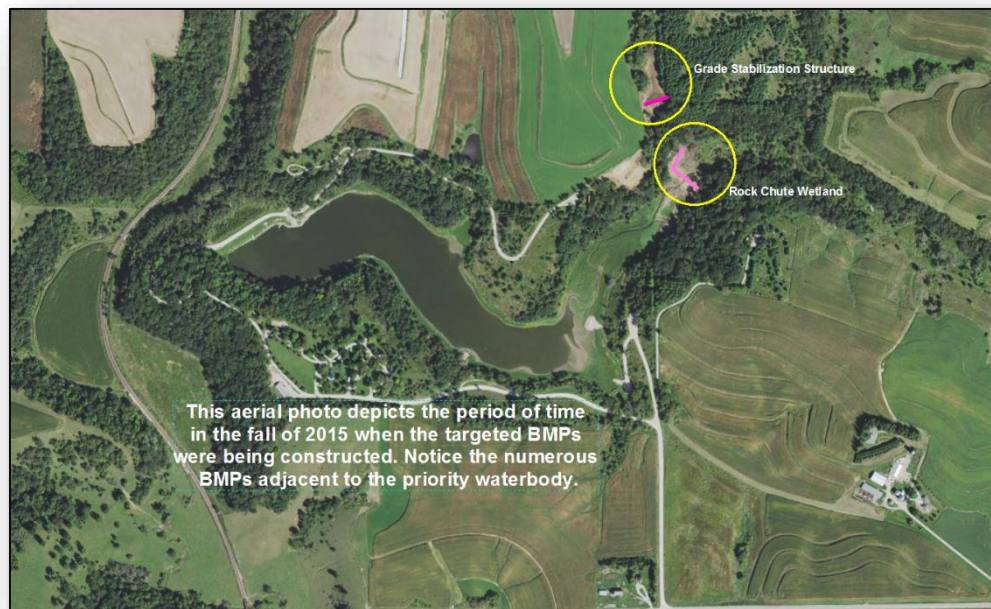
Extensive updates and reporting about the project and BMP installation was covered by local periodicals and news websites. It drew very positive responses from the community and the general public as a whole that all felt it was a very worthwhile and much needed project. We have kept an extensive photo catalog throughout the project. An extended marketing blitz of stewardship awareness was featured in the spring of 2016 during Soil & Water Conservation Week recounting the details and partnerships in the stewardship enhancements that have taken place at Lake Meyer during this past year. We have used broadcast, print and social media to deliver explanations of the project and especially the partnerships to make the project financially and ecologically viable.



The Winneshiek SWCD hosted the annual Project Coordinators Statewide meeting this past fall (2016). The LMP was one of the featured tour sites, that demonstrated the mechanics and mechanisms of putting together a watershed plan of staged and redundantly installed BMPs to get the greatest impact into stormwater, nutrient and sediment retention. This educational tour was highly regarded for innovation and material completion of a successful watershed project.

Chronologically one of the last steps for the measured success of goals accomplished for the projects was to install the informational kiosk / pedestal near the rock chute wetland and grade stabilization structure. Unified educational materials like this will be able to teach water quality and market stewardship principals on a schedule of 24 hours a day and 7days a week.





Program Accountability

Anticipated outcomes of the project for the timeline of this WIRB Award were exceptional when comparing BMPs completed. In summation it was fortunate that all the goals that were originally set were reached or exceeded at a 100% rate. Fortunately great weather in regards to timing the construction seasons and partners completing BMPs, which was opportune to benefit the project's felt impact and innovation. Ultimately fortuitous timing to support partner investment in BMP construction windows was the vast deciding factor in structural practice success of Lake Meyer Water Quality Project. Significant gains in the culture of conservation, stewardship practice implementation and overall strides in appreciation for the resources have been made. Continued collaboration going forward by producers and the partners' awarded funds have enduring potential to influence the enhancement of one of Winneshiek County's ecological gems and eco-recreational destinations.

Knowledgeable discussion by the advisory board and partners concluded through calculated discussions that the project has been a success and to keep the momentum established further funding should be initiated from funding partners to keep the project moving forward. Through the timeline of the WIRB Award the project expanded upon funding to expedite managing sediment and phosphorous loading with a grant from WSPF funding and supplementary WQI awarding was sought from the Central Turkey River Nutrient Reduction Demonstration Project to utilize the foresight from the Iowa Nutrient Reduction Strategy's wealth of management practices, as they coincided with many of the currently utilized stewardship practices in the watershed project and will also be thoroughly referred to in implementing innovative science based practices that may be fresh to producers in the targeted watershed. Practices that are being marketed for stewardship application LMP include *Cover Crops*, *N0-Till*, *Extended Rotations*, *Filter Strips*, and *Cropland to Pasture*. These practices are easy to emulate for producers and peer enactment collaboratively will increase conservation awareness.

Reporting and funding allocations were administered by the project coordinator, including plans of operation, supplemental funding/budget reconciliation, project spreadsheet with updated balances and the annual district report. The project coordinator led the aggressive marketing of the watershed effort and worked diligently to inform the public on the importance of water quantity/quality to residents in and out of the water quality focus area. The project coordinator worked on valued partnerships such as with Iowa DNR Fisheries personnel to intensively enrich the aquatic habitats within the watershed and oversaw water sampling efforts. The project coordinator managed the collection, analysis and proper documentation of water sampling efforts to ensure the continued logging of data that pertains to the removal of the LMP from the Impaired Waters List. The project coordinator operated tools such as the IDALS-DSC WQ/IA DNR pollutant delivery calculator as a measurement tool to calculate the reduction of sediment and nutrient delivery to the priority waterbody. Also, these tools assisted in selecting one conservation practice over another in the case of getting more “bang for the buck” when estimating BMP placement. BMPs were designed to stringent USDA-NRCS engineering specifications to meet their strict and precise engineering standards. Monthly reports were presented to Winneshiek SWCD commissioners to ensure district and quarterly/annual reports would be submitted to IDALS-DSC WQ and WIRB. The LMP advisory board met twice annually and an annual meeting with all project partners reviewed or modified plans of conservation practices to reach goals originally set upon the watershed project. Further project accountability was safeguarded through the ongoing use of the maintenance agreements that are used for all WIRB and IDALS-DSC WQ funded conservation practices to ensure long-term longevity of BMPs and cost effectiveness. Programs such as the Continuous CRP were utilized for its programs (when eligible) with administration be provided by the Farm Service Agency. Finally, BMPs implemented for landowners/producers at a rate not to exceed 75% for all structural practices using the funding sources of WSPF, WQI, EQIP and/or IFIPs in any combination according to available funds. Management practices stood at set fair market rates to ensure they enticed cooperation without exceeding prudent distribution of taxpayer funds.

One common barrier that became apparent throughout the project was how to reach the Lake Meyer users in an awareness campaign to prepare them for drawdown and inaccessibility of the lakes fishing / hiking areas as the watershed project progressed. Winneshiek CCB, LMP watershed coordinator and team partners suggested all local media sources participate the watershed marketing campaign, to reach all communities are geographically located outside the LMP. The vast majority of Lake Meyer visitors are not watershed residents and travel into the watershed to Lake Meyer for social, recreational events and educational events (elementary through high school), to participate in the counties of the priority waterbody. To overcome this the SWCD and partners made a concerted effort to market the project through methods such as periodical media, sponsor a partner field day, sponsor BMPs , featured articles in annual reports, radio show interviews, sent newsletters and social media encouraging awareness in the effort.

Major project rejuvenates Lake Meyer

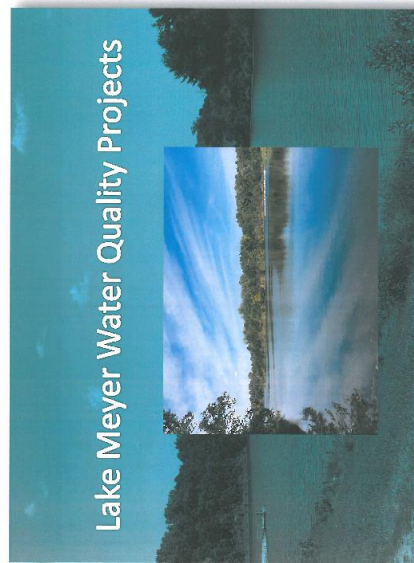
Don at Shandsburg, News Editor
Thursday, April 20, 2018 11:51 AM

After a major rejuvenation last year, Lake Meyer is ready for the upcoming recreational season. A significant enhancement project to improve and protect the lake is under way. The project, which includes the installation of a gravel structure to improve water flow and the construction of a dam to improve water quality, is being funded by the Winneshiek County Conservation Board. The project is being managed by the Iowa Department of Natural Resources. The project is expected to be completed by the end of the year.



A significant enhancement project to improve and protect the lake is under way. The project, which includes the installation of a gravel structure to improve water flow and the construction of a dam to improve water quality, is being funded by the Winneshiek County Conservation Board. The project is being managed by the Iowa Department of Natural Resources. The project is expected to be completed by the end of the year.

2016 Annual Review Meeting Presentation just click on link below to review



Progression of construction on the Rock Chute Wetland




From top to bottom:

- Stream corridor before
- Building core trench
- Placing rip rap for rock chute
- Geo-grid(rock chute base), geo-fabric (rock chute support), rip rap (dispersal of storm flows)
- Installation of water structure piping
- Completed rock chute wetland prior to seeding

WATERSHED ACCOMPLISHMENTS

- 2,983 TONS/YEAR OF SEDIMENT
- 3,878 TONS OF YEAR OF PHOSPHORUS
- OF THE 3.1 MILES OF FLOWING TRIBUTARIES IN THE WATERSHED 79% HAVE A BUFFER GREATER THAN 50 FT.
- 100% OF THE STREAM CORRIDOR HAS NO LIVESTOCK ACCESS TO STREAMS
- 92% OF THE AG LANDOWNERS IN THE WATERSHED HAVE CONSTRUCTED BMPs

Conservation Practices	Amount Installed
Continuous CRP (Filter Strips)	66.3 Acres
Manure Storage Systems	5 Units
Terraces	35,876 Feet
Grade Stabilization Structure	8 Units
Sediment & Water Control Basins	5 Units
Grassed Waterways	4,606 Feet
Stormwater Interceptors (Bio-Swales)	3 Units
Stormwater / Tile Outlet Wetlands	4 Units



These are a couple of slides that were presented about the Lake Meyer Watershed project at our SWCD VIP meeting, this esteemed crowd included state legislators, state & county officials and local news media.

IN LAKE RENOVATION

- LAYERS OF 40+ YEARS OF SEDIMENT AND NUTRIENTS
- 700+ LOADS OF SEDIMENT REMOVAL = TONS OF PHOSPHORUS REMOVAL
- HABITAT PLACEMENT



This past summer the Winneshiek SWCD along with our partners the Winneshiek County Conservation Board and Iowa DNR-Fisheries had the opportunity to place another piece of the stewardship puzzle of the Lake Meyer Watershed. Two nutrient and sediment delivery reducing structures were planned and constructed precisely within the watershed to ensure the greatest opportunity to increase the water quality of the lake basin and ensure recreational opportunities and for generations to come. Funding for this project was secured through the Watershed Improvement Review Board, Iowa Fish Habitat Stamp Fund and the Winneshiek County Supervisors.



The construction phase of the project began with the drawing down of the lake to implement construction. The lake's water began to be lowered at the end of May; a drop of 10 feet below normal pool was held throughout the summer to ensure site construction feasibility, safety and to recycle/consolidation of nutrients into vegetation that grew on exposed mudflats. Bids were requested from interested contractors, a contractor was accepted and construction began in September and the rock chute wetland and grade stabilization structure were completed by late October due to perfect weather conditions. With direction from the Winneshiek CCB the contractor went through extraordinary efforts to ensure the quality of micro habitats within the construction areas were protected throughout the projects life.

Also, during this time frame the exposed mudflats had revealed that in some places over 5 feet of sediment had been trapped within the lake bed from erosion from up within the watershed. The opportunity became available to remove some of this siltation and revive the overall capacity of the lake further. The removal of sediments played three important roles; first it will decrease the available phosphorous / nutrients that can be re-agitated during flooding events or excessive wave action that had caused algae blooms harming the recreational and health value of the lake. Secondly, more of the lake was freed of a silt blanket that increased the various habitats for numerous species of animals that use this area. The Iowa DNR also conducted extensive fish habitat projects within the lake at the time of drawdown to enhance the fish habitat and spawning areas. Lastly, the sediments were used to reclaim a county owned rock quarry that is a public nuisance and water quality hazard. The contractor and county secondary roads department removed 700+ dump truck loads of sediments from the lakebed that had been washed in over 40 years.



This is an article as it appeared in local media outlet Decorah Journal

The construction of these two structures will trap effectively over 3,000 tons per year of sediment and 3,900 pounds of phosphorus each year. That is about the equivalent of 200 dump truck loads of silt and the weight of a sedan in phosphorus that will no longer impact the health and longevity of this wonderful recreational gem of Winneshiek County.